

WHAT IS CLAIMED IS:

1. A liquid crystal electro-optical device comprising:
a pair of substrates at least one of which is transparent;
a light modulating layer interposed between the pair of substrates, the light
5 modulating layer including a liquid crystal, an optically active substance, and a
dichroic dye; and
means for applying an electric field in a direction parallel with the pair of
substrates.
2. A liquid crystal electro-optical device according to claim 1 wherein the
10 dichroic dye is a positive type.
3. A liquid crystal electro-optical device according to claim 1 wherein the
liquid crystal has positive dielectric constant anisotropy.
4. A liquid crystal electro-optical device according to claim 1 wherein the
liquid crystal has a spiral pitch p [μm] in a range of $1 \leq p \leq 15$.
- 15 5. A liquid crystal electro-optical device according to claim 1 wherein a
cell thickness d [μm] is in a range of $1 \leq d \leq 10$.
6. A liquid crystal electro-optical device according to claim 1 wherein
molecules of the liquid crystal have an orientation twist angle n in a range of $n \leq$
 300° .
- 20 7. A liquid crystal electro-optical device according to claim 1 wherein an
interelectrode distance L of the electric field applying means is in a range of $L < 25$
 μm .
8. A liquid crystal electro-optical device comprising:
a pair of substrates at least one of which is transparent;
25 a light modulating layer interposed between the pair of substrates, the light

modulating layer including a liquid crystal that contains a dichroic dye;

means for applying an electric field in a direction parallel with the pair of substrates; and

5 means provided on at least one of the pair of substrates, for orienting the light modulating layer.

9. A liquid crystal electro-optical device according to claim 8 wherein the dichroic dye is a positive type.

10. A liquid crystal electro-optical device according to claim 8 wherein the liquid crystal has positive dielectric constant anisotropy.